Space Weather Forecast

Issued on Sunday, 31 July 2022 at 00:24 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Slight Chance of G1/Minor Storm intervals day 1 (31Jul).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity is very low with no significant flares. There are currently three sunspot regions on the visible disc, with the largest region positioned in the southeast quadrant has changed little. The other two regions are small and simple. A filament eruption (arc of plasma) seen to be lifting off in the southeast has produced a Coronal Mass Ejection (CME), although the bulk of this CME appears to be heading southwards, as seen in imagery. This may give a glancing blow to Earth later in the period. Otherwise, no further Earth-directed CMEs (coronal mass ejections) were observed.

Solar Wind / Geomagnetic Activity: Solar winds were low in the range 320-370 km/s. The magnetic field was at weak to moderate levels, with the all important north-south component remaining weak. The resulting geomagnetic activity was Quiet.

Energetic Particles / Solar Radiation: The count rate of energetic particles remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Activity is likely to remain very low with a chance of common-class X-ray flares.

Solar Wind / Geomagnetic Activity: Solar winds starting the period at low levels before the arrival of a high speed stream from a small coronal hole day 1 (31Jul). Solar winds then declining again day 2 and 3 (1st and 2nd), but could see further enhancement as Earth encounters further fast winds originating from coronal hole close to the Suns south pole by day 3 (3rd). Geomagnetic activity is forecast to be Quiet with a chance of Active intervals or minor geomagnetic storm intervals day 1 (31st) and perhaps again later in the period on days 3 and 4 (2nd and 3rd Aug) from the arrival of the CME or from any enhanced solar winds related to the coronal hole in the southern hemisphere.

Energetic Particles / Solar Radiation: The count rate of energetic particles is forecast to remain at background with no solar radiation storms occurring.

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Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	10	10	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	5	5	10	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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